Claims

1. A method for locating mobile terminals in a mobile network, the method comprising the steps of:

receiving location-dependent parameter sets, each parameter set comprising at least one parameter indicative of the location of an individual mobile terminal; and

determining a location estimate for a parameter set received, the location estimate indicating the location of the respective mobile terminal;

c h a r a c t e r i z e d by the steps of:

for an individual first parameter set, forming a matrix corresponding to said set, the matrix comprising a plurality of elements, whereby each element is associated with a certain geographical area and contains a value indicating a probability of the mobile being located within said area;

storing at least one matrix formed for a mobile; and,

in response to a second parameter set subsequently received for the mobile;

- updating the values of at least one matrix stored for the mobile; and,

- determining the location estimate on the basis of the element values of the matrix corresponding to the second parameter set and on the basis of the element values of the said at least one matrix having the updated values.

2. The method as defined in claim 1, c h a r a c t e r i z e d in that the determining step includes

- combining the element values of the matrix corresponding to the second parameter set received and the element values of said at least one matrix having the updated values according to predetermined rules, whereby a combined matrix is obtained; and,

- defining the location estimate on the basis of the combined matrix.

3. The method as defined in claim 2, c h a r a c t e r i z e d in that

the storing step includes storing the combined matrix; and,

the updating step includes updating the values of the combined matrix obtained in connection with a preceding parameter set received for the mobile.

4. The method as defined in claim 3, c h a r a c t e r i z e d in that the updating step includes updating the values repetitively in successive calculation

cycles, whereby the updated values obtained in a calculation cycle are updated in the next calculation cycle.

5. The method as defined in claim 4, c h a r a c t e r i z e d in that the number of calculation cycles is directly proportional to the time elapsed since
5   the updating step performed in connection with the preceding parameter set received for the mobile.

6. The method as defined in claim 1, c h a r a c t e r i z e d in that the forming step includes weighting said values on the basis of map information describing surface types of said geographical areas.

10   7. The method as defined in claim 1, c h a r a c t e r i z e d in that the updating step includes weighting the values of said at least one matrix on the basis of information indicating the movement of the mobile.

8. The method as defined in claim 1, c h a r a c t e r i z e d in that the updating step includes weighting the values of said at least one matrix on the
15   basis of map information describing surface types of said geographical areas.

9. The method as defined in claim 1, c h a r a c t e r i z e d in that the forming step includes calculating the matrix in response to a parameter set received.

10. The method as defined in claim 1, c h a r a c t e r i z e d in that the
20   forming step includes

- calculating a plurality of matrices in advance,

- associating each matrix with at least one parameter set, and

in response to a parameter set received, retrieving a matrix corresponding to said parameter set.

25   11. A system for locating mobile terminals in a mobile network, the system comprising:

first means for receiving parameter sets, each parameter set including at least one parameter indicative of the location of an individual mobile terminal and

30   second means for finding a location estimate for a parameter set received, the location estimate indicating the location of the respective mobile terminal,

c h a r a c t e r i z e d in that the system comprises

third means for forming a matrix corresponding to a parameter set,
35   the matrix comprising a plurality of elements, whereby each element is associ-

ated with a certain geographical area and contains a value indicating a probability of the mobile being located within said area, and

fourth means for storing at least one matrix formed for a mobile,

wherein the second means, responsive to a parameter set received for the mobile, are adapted (a) to update the values of at least one matrix stored for the mobile and (b) to determine the location estimate on the basis of the element values of the matrix corresponding to the parameter set received and on the basis of the element values of the matrix with the updated values.

12. A mobile terminal for a mobile network, the mobile terminal comprising:

first means for receiving parameter sets, each parameter set including at least one parameter whose value is dependent on the location of the mobile terminal within the network and

second means for finding a location estimate for a parameter set received, the location estimate indicating the location of the mobile terminal,

c h a r a c t e r i z e d in that the mobile comprises

third means for storing at least one matrix in the mobile, the matrix comprising a plurality of elements, whereby each element is associated with a certain geographical area and contains a value which indicates a probability of the mobile locating within said area,

wherein the second means, responsive to a parameter set received, are adapted (a) to update the values of at least one matrix stored in the mobile and (b) to determine the location estimate on the basis of the element values of the matrix corresponding to the parameter set received and on the basis of the element values of the matrix with the updated values.

13. A mobile terminal as defined in claim 12, c h a r a c t e r i z e d by further comprising means for forming a matrix corresponding to a parameter set received.

14. A mobile terminal as defined in claim 12, c h a r a c t e r i z e d by further comprising means for downloading from the mobile network a predetermined matrix corresponding to a parameter set received by the mobile.

15. A computer program product stored on a computer readable storage media, the product being adapted to perform the steps of claim 1 when run on a computer.

16. A method for locating mobile terminals in a mobile network, the method comprising the steps of:

== 18 ==

receiving location-dependent parameter sets, each parameter set comprising at least one parameter indicative of the location of an individual mobile terminal;

5 for an individual first parameter set, forming a matrix corresponding to said set, the matrix comprising a plurality of elements, whereby each element is associated with a certain geographical area and contains a value indicating a probability of the mobile being located within said area;

storing at least one matrix formed for a mobile; and,

in response to a second parameter set subsequently received for the 10 mobile terminal;

- updating the values of at least one matrix stored for the mobile; and,

- determining the location estimate on the basis of the element values of the matrix corresponding to the second parameter set and on the 15 basis of the element values of the said at least one matrix having the updated values.